## What is claimed is:

1. A digital signal processing device comprising:

multiplication means for multiplying an input  $\Delta\Sigma$  modulation signal generated from  $\Delta\Sigma$  modulation by a factor;

 $\Delta\Sigma$  modulation means having a plurality of integrators for varying effective orders and applying  $\Delta\Sigma$  modulation again to an output from said multiplication means; and

switchover means for switching between a reprocessed  $\Delta\Sigma$  modulation signal from said  $\Delta\Sigma$  modulation means and said input  $\Delta\Sigma$  modulation signal.

- 2. The digital signal processing device according to claim 1, wherein said  $\Delta\Sigma$  modulation means comprises order control means for varying effective orders depending on signal switchover situations in said switchover means.
- 3. The digital signal processing device according to claim 2, wherein said order control means varies effective orders for said  $\Delta\Sigma$  modulation means at an approximate timing when said switchover means switches between said input  $\Delta\Sigma$  modulation signal and said reprocessed  $\Delta\Sigma$  modulation signal.
- 4. The digital signal processing device according to claim 2, wherein said order control means varies effective orders for said  $\Delta\Sigma$  modulation means at an approximate timing when said switchover means switches between a fixed signal changing to no sound in an audible band and music data processed with  $\Delta\Sigma$  modulation.

- 5. The digital signal processing device according to claim 1, wherein said  $\Delta\Sigma$  modulation means comprises fraction elimination means for eliminating a fraction remaining in said integrator.
- 6. A digital signal processing method, comprising steps of: a multiplication step for multiplying an input  $\Delta\Sigma$  modulation signal generated

from  $\Delta\Sigma$  modulation by a specified factor for specified processing;

a reprocessed  $\Delta\Sigma$  modulation step for reapplying  $\Delta\Sigma$  modulation to an output provided with said specified processing by using a  $\Delta\Sigma$  modulator comprising a plurality of integrators for varying effective orders; and

a switchover step for switching between said input  $\Delta\Sigma$  modulation signal and said reprocessed  $\Delta\Sigma$  modulation signal.

- 7. The digital signal processing method according to claim 6, wherein said reprocessed  $\Delta\Sigma$  modulation step varies effective orders for said  $\Delta\Sigma$  modulator depending on signal switchover situations in said switchover step.
- 8. The digital signal processing method according to claim 7, wherein said reprocessed  $\Delta\Sigma$  modulation step varies effective orders for said  $\Delta\Sigma$  modulator at an approximate timing when said switchover step switches between said input  $\Delta\Sigma$  modulation signal and said reprocessed  $\Delta\Sigma$  modulation signal.
- 9. The digital signal processing method according to claim 7, wherein said reprocessed  $\Delta\Sigma$  modulation step varies effective orders for said  $\Delta\Sigma$  modulator at an

approximate timing when said switchover step switches between a fixed signal changing to no sound in an audible band and music data processed with  $\Delta\Sigma$  modulation.

- 10. The digital signal processing method according to claim 6, wherein said reprocessed  $\Delta\Sigma$  modulation step not only varies effective orders for a  $\Delta\Sigma$  modulator, but also eliminates a fraction remaining in said integrator.
- 11. A  $\Delta\Sigma$  modulator for applying  $\Delta\Sigma$  modulation to a multi-bit signal comprising: a plurality of integrators; and order variation means for varying effective orders increasing due to connection with a plurality of said integrators.
- 12. The  $\Delta\Sigma$  modulator according to claim 11, wherein the fraction elimination means for eliminating a fraction remaining in said integrator.